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10/629,127	07/29/2003	Chris E. Barns	ITL.1016US (P16703)	5928

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EXAMINER	
DUONG, KHANH B	

ART UNIT	PAPER NUMBER
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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
10629127	7/29/2003	BARNS ET AL.	ITL.1016US (P16703)

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EXAMINER	
KHANH B.. DUONG	
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Commissioner for Patents

In response to the remand from The Board of Patent Appeals and Interferences dated May 13, 2008, please amend the "Grounds of Rejection" section of the Examiner's Answer mailed March 28, 2006 as follows:

(6) Grounds of Rejection to be Reviewed on Appeal

Claims 1-3 and 5-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (U.S. Patent No. 6,800,530).

Re claims 1-3, Lee et al. ("Lee") discloses in FIG. 1 to 8 a method comprising: covering a polysilicon gate structure 30 with a nitride hard mask 52, said mask 52 and said gate structure 30 having opposed, common vertical surfaces; forming a sidewall spacer 72 that extends along a vertical surface and covers said gate structure 30 and covers at least part of said mask 52; and removing said hard mask 52 using either a CMP process or a stripping process (etching) that is inherently selective of the hard mask 52 over the spacer 72 [see col. 4, lines 10-20]. Such inherent selective property of the stripping process toward the nitride hard mask is discussed by Yeh (U.S. Patent No. 5,023,694) at column 17, lines 8-12.

Re claims 5-8, Lee expressly discloses in FIG. 7 to 8 the mask 52 is removed after forming a silicide 137 by etching and/or polishing [see col. 4, lines 13-20].

Re claim 9, Lee discloses in FIG. 8 replacing the polysilicon gate structure 30 with a metal gate 133 replacement.

Re claim 10, Lee discloses in FIG. 2 forming the polysilicon gate structure including a patterned polysilicon portion 30 and underlying dielectric layer 20.

Re claim 12, Lee discloses in FIG. 3 forming the spacers 72 on either side of the polysilicon gate structure.

Re further claims 1-3, 11 and 12, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed ("to prevent the formation of a silicide on the gate structure", "protecting the polysilicon gate structure", etc.) does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F. 2d 1647 (1987).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (U.S. Patent No. 6,800,530) in view of Lee (U.S. Patent No. 6,258,648).

Re claim 4, Lee '530 fails to disclose forming the mask 52 on at least one polysilicon gate structure 30 and removing the mask 52 over another gate structure to form a silicide on the another gate structure.

Lee '648 suggests in FIG. 2 to 6 forming a mask 26 on at least one polysilicon gate structure 10 and removing the mask 26 over another gate structure 10 to form a silicide 32 on the another gate structure 10.

Since Lee '530 and Lee '648 are from the same field of endeavor, the purpose disclosed by Lee '648 would have been recognized in the pertinent prior art of Lee '530.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Lee '530 with the suggestion of Lee '648 because of the desirability to selectively form salicide structures. Furthermore, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed ("selectively protecting at least one polysilicon gate structure with the mask to prevent the formation of a silicide ") does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F. 2d 1647 (1987).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (U.S. Patent No. 6,800,530) in view of Wang et al. (U.S. Patent No. 6,248,002).

Re claim 13, Lee '530 fails to disclose using a two-step polish to remove said mask including a first step using a harder pad and a second step using a softer pad.

Wang et al. ("Wang") expressly suggests in FIG. 6 using a three-step polish including a first step using a harder pad and a second step using a softer pad.

Since Lee '530 and Wang are both from the same field of endeavor, the purpose disclosed by Wang would have been recognized in the pertinent prior art of Lee '530.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Lee '530 as suggested by Wang, since Wang states in the ABSTRACT that such modification would prevent the accumulation of particle impurities on the surface of a semiconductor substrate that contains wofram plugs during the process of polishing the surface of the wafer.

Claims 14, 16-19 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U.S. Patent No. 6,258,648) in view of Lee et al. (U.S. Patent No. 6,800,530).

Lee '648 discloses in FIG. 2 to 6 a method comprising: selectively forming a nitride hard mask layer 26 on a first polysilicon gate structure 10; and forming a silicide 32 on a second polysilicon gate structure 10; and removing the hard mask 26 using a selectively etch (with a mask pattern 28 to form sidewall spacers 30).

Re claim 14 and 16-19, Lee '648 fails to disclose replacing the first polysilicon gate structure with a metal gate replacement.

Lee '530 suggests in FIG. 8 replacing a polysilicon gate structure 30 with a metal gate replacement 133, and removing mask 52 after forming a silicide 137.

Since Lee '648 and Lee '530 are both from the same field of endeavor, the purpose disclosed by Lee '530 would have been recognized in the pertinent prior art of Lee '648.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Lee '648 as suggested by Lee '530 because of the desire to form a temperature sensitive gate electrode so as to enhance device performance.

Re further claims 14 and 16-19, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed ("selectively preventing the formation of a silicide on a first polysilicon gate structure ", etc.) does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F. 2d 1647 (1987).

Re claims 25-27, Lee '648 discloses said hard mask 26 is nitride, said first polysilicon structure 10 includes sidewall spacers (12, 30), and an (anisotropic) etch is used that is inherently selective of said nitride 26 [see col. 4, lines 2-7].

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee '648 and Lee '530 as applied to claims 14, 16-19 and 25-27 above, and further in view of Deckert et al. (U.S. Patent No. 4,269,654).

Re claim 28, Lee '648 and Lee '530 fail to disclose using ortho-phosphoric acid (H3PO4) to etch said mask.

Deckert et al. ("Deckert") suggests "[r]efluxing ortho-phosphoric acid is an excellent etch for silicon nitride, but it does not etch silicon oxide" [see col. 1, lines 35-38].

Since Lee '648, Lee '530 and Deckert are from the same field of endeavor, the purpose disclosed by Deckert would have been recognized in the pertinent prior art of Lee '648 and Lee '530.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combined method of Lee '648 and Lee '530 in the manner as suggested by Deckert because of the desirability to selectively etch silicon nitride without etching silicon oxide.

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